

## THE PLEISTOCENE VERTEBRATE FAUNA OF REDDICK, FLORIDA

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AN abandoned limerock quarry on property of the Dixie Lime Products Company, located one mile southeast of Reddick, Marion County, Florida (SW  $\frac{1}{4}$ , NW  $\frac{1}{4}$ , Sec. 14, T. 13 S., R. 21 E.), contains one of the richest vertebrate local faunas in the Pleistocene of North America. The fossiliferous deposits are unconsolidated earths accumulated in a tightly clustered complex of limestone caverns and solution pipes. These deposits now lie exposed in the quarry as a result of the enveloping country rock having been mined away years ago. It is no longer possible to determine the degree of interconnection which might have existed among the various caverns. The deposits seem to be at least penecontemporaneous on the basis of faunal, topographic, and stratigraphic evidence, although there is some indication of minor temporal differences (Auffenberg, 1963b, p. 141).

These deposits have been assigned tentatively an Illinoian age, primarily on the basis of their subjacent relation to the Wicomico (Sangamon?) Terrace and the percentage of extinction in the avifauna.

Each major deposit in the group has been assigned a letter designation in order to maintain the integrity of each unit. Although there has been some duality of designation in the past, that used and mapped by Hamon (in press) has priority and should be followed henceforth. However, the letter designation of each deposit should be prefixed by the Roman numeral I, which designates the quarry in which the deposits are exposed. Thus Reddick IA indicates deposit A in quarry I near Reddick. This system is in use for other similar localities in Florida. Reddick IA, comprising the so-called "Rodent Beds," is the most extensive deposit. It is largely of owl-pellet origin and contains remains not only of small rodents but of many other small vertebrates in great profusion. Reddick IB has yielded numerous remains of vampire bats (Olsen, 1960b) and large carnivores. Reddick IC is particularly rich in well preserved bones of small birds and has been studied primarily by Hamon (in press). Reddick ID has produced mainly the remains of tortoises and large mammals. More detailed statements

regarding the stratigraphy and correlation of these deposits can be found in Auffenberg (1963b, pp. 141-142), Bader (1957, pp. 71-73), Brodkorb (1957, pp. 129-130), and especially Hamon (in press), who includes a detailed locality map.

The initial discovery of fossils at Reddick I was made in 1937 by E. J. Moughton, Jr., who brought the site to the attention of the senior author. Together they and other associates have continued to collect there intermittently through most of the intervening years. Beginning in 1951 with the work of Pierce Brodkorb other workers have become increasingly interested in the site, with the result that several major collections now exist. Those known to us are as follows:

Amherst College, Amherst, Massachusetts, Department of Biology. Matrix sample from Reddick IA.

Brodkorb Collection at University of Florida. Limited to avian remains and the major repository for that group.

Carnegie Museum, Pittsburgh, Pennsylvania. Matrix sample from Reddick IA.

Florida Geological Survey, Tallahassee. Large collection of non-avian remains.

Florida State Museum, University of Florida. General collection from all localities, especially rich in poikilotherm remains.

Gut Collection, Sanford, Florida. Large collection of primarily mammalian remains. Fossil birds transferred to Brodkorb Collection and certain critical mammalian specimens to Florida Geological Survey and Florida State Museum.

Museum of Comparative Zoology, Cambridge, Massachusetts. General collection, primarily from Reddick IA.

Tulane University, New Orleans, Louisiana, Department of Zoology. Matrix sample from Reddick IA.

University of Illinois, Urbana, Department of Zoology. Matrix sample from Reddick IA.

Studies in progress based on these collections include analysis of faunal samples by J. E. Guilday at the Carnegie Museum and A. E. Wood at Amherst College; population studies based on mammalian calcanea by H. J. Stains and A. A. Arata of Southern Illinois and Tulane Universities, respectively; taxonomic study of the microtines with special emphasis on *Synaptomys* by Arata; quantitative studies on *Peromyscus* by R. S. Bader of the University of Illinois; evolutionary study of the larger carnivores by B. Kurtén of the University of Helsinki; taxonomic study of *Bison* by J. S.

Robertson of the University of Florida; and continuing studies of the avifauna by Pierce Brodkorb.

Although segments of the mammalian (Gut, 1959; Olsen, 1960b; Ray et al., 1963) and reptilian (Auffenberg, 1958, 1963a, 1963b) faunas have been subjected to recent study, only the avifauna has been analyzed comprehensively (Brodkorb, 1957, 1963; Hamon, in press). The avifauna stands at some 64 species including those being recorded by Hamon (in press). Although Brodkorb (1957, p. 129) asserts that the herpetofauna includes about 50 species, and Auffenberg (1963b, p. 142) indicates that "of the reptile and amphibian fossils taken from this deposit there are but a few species missing from a list comprising the known herpetofauna of the central part of the peninsula at the present time," only a few of these have been explicitly recorded. Since Gut's (1939) initial publication on the site the list of mammals has increased by some 280 per cent to 53 species. Thus the fauna includes no less than 167 vertebrate species.

For various reasons, a comprehensive study of the mammals has never materialized and seems unlikely to do so in the immediate future. On this account, and in view of the considerable current interest in the fauna, it has seemed to us desirable to present a list of the mammals identified thus far, together with a list of the known non-mammalian fauna (exclusive of Hamon's 10 additions to the avifauna) and a complete bibliography of primary literature on the site. Such a list leaves much to be desired, particularly regarding relative abundance of species. It does not reveal for example that the ocelot is known from a single specimen, whereas the shrews, moles, and some rodents are known from literally hundreds (potentially thousands if the counts were pursued). It is hoped that studies in progress by various workers will remedy this situation.

Many workers have studied and performed the original identifications upon segments of the fauna over a period of some years, so that the function of the present authors is largely that of compilation of published and unpublished records. While we wish to acknowledge the original work and in many cases direct assistance of the following colleagues, we alone are responsible for errors in the present publication: Andrew A. Arata, Walter Auffenberg, Robert S. Bader, Pierce Brodkorb, Sue E. Hirschfeld, J. Howard Hutchison, Björn Kurtén, and Stanley J. Olsen.

LIST OF THE VERTEBRATES

In the following list, extinct species or subspecies are denoted by an asterisk (\*), and extinct genera by a dagger (†), in advance of the scientific name.

Class AMPHIBIA

Order Urodela

Family SIRENIDAE

*Siren lacertina* Linnaeus 1766: Great Siren

\**Pseudobranchius robustus* Goin and Auffenberg 1955: Mud Siren

Family AMBYSTOMIDAE

*Ambystoma*, sp. indet.: Salamander

Order Anura

Family PELOBATIDAE

*Scaphiopus holbrookii* (Harlan 1835): Eastern Spadefooted Toad

Family BUFONIDAE

*Bufo quercicus* Holbrook 1840: Oak Toad

*B. terrestris* (Bonnaterre 1789): Common American Toad

Family MICROHYLIDAE

*Gastrophryne carolinensis* (Holbrook 1836): Narrow-mouthed Toad

Family HYLIDAE

*Hyla*, sp. indet.: Tree Frog

Family RANIDAE

*Rana pipiens* Schreber 1782: Leopard Frog

Class REPTILIA

Order Chelonia

Family TESTUDINIDAE

*Pseudemys*, sp. indet.: Terrapin

\**Terrapene carolina putnami* (Hay 1906): Box Turtle. Extinct subspecies, possibly including some intergrades with *T. c. carolina* or *T. c. bauri*.

*Gopherus polyphemus* (Daudin 1803): Gopher Tortoise

\**Geochelone (Hesperotestudo) incisa* (Hay 1916): Small Land Tortoise

\**G. (Caudochelys) crassiscutata* (Leidy 1889): Giant Land Tortoise

*Trionyx ferox* (Schneider 1783): Soft-shelled Turtle

### Order Squamata

#### Family IGUANIDAE

*Anolis carolinensis* (Voigt 1832): Green Anole

#### Family TEIIDAE

*Cnemidophorus sexlineatus* (Linnaeus 1766): Eastern Race Runner

#### Family SCINCIDAE

*Eumeces*, cf. *E. fasciatus* (Linnaeus 1758): cf. Five-lined Skink

#### Family ANGUIDAE

*Ophisaurus ventralis* (Linnaeus 1766): Common Glass Lizard

#### Family AMPHISBAENIDAE

*Rhineura floridana* (Baird 1858): Florida Worm Lizard

#### Family COLUBRIDAE

*Carphophis amoenus* (Say 1825): Worm Snake

*Diadophis punctatus* (Linnaeus 1766): Eastern Ringnecked Snake

*Farancia* and/or *Abastor*, sp. indet.: Mud Snake and/or Rainbow Snake

*Rhadinea flavilata* (Cope 1871): Yellow-lipped Snake

*Heterodon platyrhinos* Latreille 1802: Eastern Hognosed Snake

*H. simus* (Linnaeus 1766): Southern Hognosed Snake

*Opheodrys aestivus* (Linnaeus 1766): Rough Green Snake

*Coluber constrictor* Linnaeus 1758: Black Snake

*Masticophis flagellum* (Shaw 1802): Coachwhip

- Drymarchon corais* (Daudin 1803): Indigo Snake  
*Lampropeltis getulus* (Linnaeus 1766): Common Kingsnake  
*Elaphe guttata* (Linnaeus 1766): Corn Snake  
*E. obsoleta* (Say 1823): Rat Snake  
*Pituophis melanoleucus* (Daudin 1803): Pine Snake  
*Tantilla coronata* Baird and Girard 1853: Crowned Snake  
*Storeria*, cf. *S. dekayi* (Holbrook 1842): cf. Brown Snake  
*Thamnophis sirtalis* (Linnaeus 1758): Common Garter Snake

## Family ELAPIDAE

- Micrurus fulvius* (Linnaeus 1766): Eastern Coral Snake

## Family CROTALIDAE

- Sistrurus miliarius* (Linnaeus 1766): Pigmy Rattlesnake  
*Crotalus adamanteus* Beauvois 1799: Eastern Diamondback Rattlesnake

## Order Crocrodilia

## Family CROCODYLIDAE

- Alligator mississippiensis* (Daudin 1803): American Alligator

## Class AVES

## Order Colymbiformes

## Family PODICIPEDIDAE

- Podilymbus podiceps* (Linnaeus 1758): Pied-billed Grebe  
 \**Podiceps dixi* Brodkorb 1963: Grebe

## Order Anseriformes

## Family ANATIDAE

- Anas fulvigula* (Ridgway 1874): Mottled Duck  
*A. acuta* Linnaeus 1758: Pintail  
*A. clypeata* Linnaeus 1758: Shoveler  
*Querquedula discors* (Linnaeus 1766): Blue-winged Teal  
*Nettion crecca* (Linnaeus 1758): Green-winged Teal  
*Aythya collaris* (Donovan 1809): Ring-necked Duck

Order **Falconiformes**

## Family CATHARTIDAE

- \**Gymnogyps amplus* L. H. Miller 1911: Condor  
*Cathartes aura* (Linnaeus 1758): Turkey Vulture  
\**Coragyps occidentalis* (L. H. Miller 1909): Vulture

## Family ACCIPITRIDAE

- Accipiter cooperii* (Bonaparte 1828): Cooper's Hawk  
*A. striatus* Vieillot 1807: Sharp-shinned Hawk  
*Buteo jamaicensis* (Gmelin 1788): Red-tailed Hawk  
*B. lineatus* (Gmelin 1788): Red-shouldered Hawk

## Family FALCONIDAE

- Falco peregrinus* Tunstall 1771: Peregrine Falcon  
*F. sparverius* Linnaeus 1758: Sparrow Hawk  
\**Caracara prelutosa* (Howard 1938): Caracara

Order **Galliformes**

## Family PHASIANIDAE

- \**Colinus sullivanii* Brodkorb 1959: Quail  
†*Neortyx peninsularis* Holman 1961: Quail

## Family MELEAGRIDAE

- Meleagris gallopavo* Linnaeus 1758: Turkey

Order **Gruiformes**

## Family RALLIDAE

- Rallus limicola* Vieillot 1819: Virginia Rail  
*Porzana carolina* (Linnaeus 1758): Sora  
\**P. auffenbergi* Brodkorb 1954: Rail  
*Coturnicops noveboracensis* (Gmelin 1789): Yellow Rail  
\**Laterallus guti* Brodkorb 1952: Rail  
\**Fulica minor* Shufeldt 1891: Coot

Order Charadriiformes

Family CHARADRIIDAE

*Charadrius vociferus* Linnaeus 1758: Killdeer

Family SCOLOPACIDAE

*Tringa flavipes* (Gmelin 1789): Lesser Yellowlegs

*Capella delicata* (Ord 1825): Common Snipe

Order Columbiformes

Family COLUMBIDAE

†*Ectopistes migratorius* (Linnaeus 1766): Passenger Pigeon. Ex-  
terminated in historic time.

*Zenaidura macroura* (Linnaeus 1758): Mourning Dove

Order Strigiformes

Family TYTONIDAE

*Tyto alba* (Scopoli 1769): Barn Owl

Family STRIGIDAE

*Otus asio* (Linnaeus 1758): Screech Owl

*Speotyto cunicularia* (Molina 1782): Burrowing Owl

*Strix varia* Barton 1799: Barred Owl

Order Piciformes

Family PICIDAE

*Colaptes auratus* (Linnaeus 1758): Yellow-shafted Flicker

*Melanerpes erythrocephalus* (Linnaeus 1758): Red-headed Wood-  
pecker

Order Passeriformes

Family TYRANNIDAE

*Tyrannus tyrannus* (Linnaeus 1758): Eastern Kingbird

Family HIRUNDINIDAE

*Progne subis* (Linnaeus 1758): Purple Martin

\**Tachycineta speleodytes* Brodtkorb 1957: Swallow



## Family CORVIDAE

- Corvus brachyrhynchos* Brehm 1822: Common Crow  
*C. ossifragus* Wilson 1812: Fish Crow  
 †*Protocitta dixi* Brodkorb 1957: Jay  
*Cyanocitta cristata* (Linnaeus 1758): Blue Jay

## Family TROGLODYTIDAE

- Troglodytes aëdon* Vieillot 1807: House Wren  
 \**Cistothorus brevis* Brodkorb 1957: Wren

## Family PARULIDAE

- Geothlypis trichas* (Linnaeus 1766): Maryland Yellowthroat

## Family ICTERIDAE

- †*Pandanaris floridana* Brodkorb 1957: Brown-headed Cowbird  
*Agelaius phoeniceus* (Linnaeus 1766): Red-winged Blackbird  
*Quiscalus quiscula* (Linnaeus 1758): Common Grackle  
*Sturnella magna* (Linnaeus 1758): Eastern Meadowlark

## Family FRINGILLIDAE

- Pipilo erythrophthalmus* (Linnaeus 1758): Rufous-sided Towhee  
*Passerherbulus henslowii* (Audubon 1831): Henslow's Sparrow

## Class MAMMALIA

## Order Marsupialia

## Family DIDELPHIDAE

- Didelphis marsupialis* Linnaeus 1758: Opossum

## Order Insectivora

## Family SORICIDAE

- Blarina brevicauda* (Say 1823): Short-tailed Shrew  
*Cryptotis parva* (Say 1823): Least Shrew

## Family TALPIDAE

- Scalopus aquaticus* (Linnaeus 1758): Eastern Mole

Order **Chiroptera**

Family **DESMODONTIDAE**

\**Desmodus magnus* Gut 1959: Vampire Bat

Family **VESPERTILIONIDAE**

*Myotis austroriparius* (Rhoads 1897): Southeastern Myotis

*Lasiurus borealis* (Müller 1776): Red Bat

*Dasypterus floridanus* Miller 1902: Florida Yellow Bat

Family **MOLOSSIDAE**

*Tadarida brasiliensis* (I. Geoffroy St.-Hilaire 1824): Brazilian Free-tailed Bat

Order **Edentata**

Family **MEGALONYCHIDAE**

†*Megalonyx*, cf. *M. wheatleyi* Cope 1871: cf. Wheatley's Ground Sloth

Family **MYLODONTIDAE**

†*Paramylodon*, cf. *P. harlani* (Owen 1840): cf. Harlan's Ground Sloth

Family **DASYPODIDAE**

\**Dasypus bellus* (Simpson 1929): Armadillo

†*Chlamytherium septentrionalis* (Leidy 1890): Giant "Armadillo"

Family **GLYPTODONTIDAE**

†*Boreostracon floridanus* Simpson 1929: Glyptodont

Order **Lagomorpha**

Family **LEPORIDAE**

*Sylvilagus palustris* (Bachman 1837): Marsh Rabbit

*S. floridanus* (J. A. Allen 1890): Eastern Cottontail

Order **Rodentia**

Family **SCIURIDAE**

*Sciurus*, sp. indet.: Squirrel

*Glaucomys volans* (Linnaeus 1758): Southern Flying Squirrel

## Family GEOMYIDAE

*Geomys pinetis* Rafinesque 1817: Southeastern Pocket Gopher

## Family CRICETIDAE

*Oryzomys palustris* (Harlan 1837): Marsh Rice Rat

*Reithrodontomys humulis* (Audobon and Bachman 1841): Eastern Harvest Mouse

*Peromyscus* (*Peromyscus*) *polionotus* (Wagner 1843): Oldfield Mouse

*P. (P.) gossypinus* (Le Conte 1853): Cotton Mouse

*P. (Podomys) floridanus* (Chapman 1889): Florida Mouse

*P. (Ochrotomys) nuttalli* (Harlan 1832): Golden Mouse

*Sigmodon hispidus* Say and Ord 1825: Hispid Cotton Rat

*Neotoma floridana* (Ord 1818): Eastern Wood Rat

*Microtus (Pitymys) pinetorum* (Le Conte 1830): Pine Vole

*Neofiber alleni* True 1884: Round-tailed Muskrat

\**Synaptomys (Synaptomys) australis* Simpson 1928: Bog Lemming

## Order Carnivora

## Family CANIDAE

\**Canis (Aenocyon) ayersi* Sellards 1916: Florida Dire Wolf

*Canis latrans* Say 1823: Coyote

*Urocyon cinereoargenteus* (Schreber 1775): Gray Fox

## Family URSIDAE

\**Tremarctos floridanus* (Gidley 1928): Spectacled Bear

*Ursus americanus* Pallas 1780: Black Bear

## Family PROCYONIDAE

*Procyon lotor* (Linnaeus 1758): Raccoon

## Family MUSTELIDAE

*Spilogale putorius* (Linnaeus 1758): Eastern Spotted Skunk

*Mephitis mephitis* (Schreber 1776): Striped Skunk

Family FELIDAE

- °*Felis (Panthera) onca augusta* (Leidy 1872): Jaguar  
 °*F. (Puma) inexpectata* (Cope 1896): Mountain Lion  
*F. (Leopardus) pardalis* Linnaeus 1758: Ocelot  
*F. (Lynx) rufus* Schreber 1777: Bobcat  
 †*Smilodon*, sp. indet.: Sabertooth

Order Proboscidea

Family MAMMUTIDAE

- †*Mammut americanum* (Kerr 1792): American Mastodon

Family ELEPHANTIDAE

- †*Mammuthus*, sp. indet.: Mammoth

Order Perissodactyla

Family EQUIDAE

- °*Equus*, sp. indet.: Horse

Family TAPIRIDAE

- °*Tapirus veroensis* Sellards 1918: Tapir

Order Artiodactyla

Family TAYASSUIDAE

- †*Mylohyus*, cf. *M. gidleyi* Simpson 1929: Peccary  
 †*Platygonus*, cf. *P. compressus* Le Conte 1848: Peccary

Family CAMELIDAE

- †*Camelops*, sp. indet.: Camel  
 †*Tanupolama mirifica* Simpson 1929: Camel

Family CERVIDAE

- Odocoileus virginianus* (Zimmermann 1780): White-tailed Deer

Family BOVIDAE

- °*Bison*, sp. indet.: Bison

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